Guidance for Industry

KI in Radiation Emergencies — Questions and Answers

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Drug Evaluation and Research (CDER)

April 2002
Procedural

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I. INTRODUCTION

This guidance provides answers to questions that may arise as state and local governments formulate emergency response plans pertaining to the use of potassium iodide (KI) in the event that radioactive iodine is accidentally released into the atmosphere. KI is recommended for use as an adjunct to other emergency measures, such as evacuation and food control measures. When used correctly, KI can prevent or reduce the uptake of radioiodine by the thyroid gland. KI provides optimal protection when administered immediately prior to or in conjunction with passage of a radioactive cloud. The incorporation of KI into radiation emergency response plans is at the discretion of state and local governments.

II. BACKGROUND

In a guidance entitled *Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies* (December 2001), the Food and Drug Administration (FDA) updated its 1982 recommendations for the safe and effective use of KI to prevent or reduce the uptake of radioiodine by the thyroid gland. The current recommendations are based on conclusions reached after reviewing data on radioiodine exposure and thyroid cancer risk gathered after the Chernobyl nuclear reactor accident in 1986. The data suggest that the risk of thyroid cancer is inversely related to age. Fetuses, infants, and young children are at greatest risk and may be harmed by small amounts of radioiodine.

Although special precautions should be taken when administering KI to pregnant women and newborns within the first month of life (adherence to the recommended dose, avoidance of repeat dosing, and monitoring of thyroid function in neonates), the benefits of short-term administration of KI as a thyroid blocking agent far exceed the risks of administration to any age group.

[1] This guidance has been prepared by the Division of Metabolic and Endocrine Drug Products in the Center for Drug Evaluation and Research (CDER) .

For complete information, please refer to FDA's December 2001 guidance.

III. QUESTIONS AND ANSWERS

Q1: Does FDA have specific recommendations about radiation emergency preparedness plans and the use of KI?

A1: No. Decisions about the details of their preparedness plans are up to state and local authorities. FDA's guidance provides ***general*** recommendations about the use of KI prophylaxis in the event of an accident. These recommendations are discussed in Section V. of the guidance.

Q2: Is the graded dosing scheme recommended by FDA the only safe and effective way to take KI?

A2: No. FDA has made recommendations on the lowest effective dose. Higher doses (e.g., up to 130 mg) would be equally effective and, particularly among school-age children, extremely safe.

Q3: If a graded dosing approach is considered, how does FDA suggest that fractional doses (i.e., 65, 32, 16 mg) be administered?

A3: KI tablets can be dissolved in liquids and the appropriate volume administered. For example, if a 130 mg tablet were dissolved in 8 ounces of liquid, one ounce would contain 16 mg of KI. (FDA is planning to conduct studies of the palatability, solubility, and stability of KI dissolved in a number of different liquids, including juice and formula.) Emergency planners and others should understand that absolute precision in dosing is generally not critical to safety or efficacy.

Q4: Will dosage strengths of KI below 130 mg be available in the United States?

A4: Yes. FDA is working with manufacturers of KI to expedite the submission and review of applications for lower dosage strength tablets. At this time, FDA has no indication that strengths below 65 mg will be available.

Q5: What guidance can FDA give with regard to balancing the need for graded dosing with the demands of a given emergency situation?

A5: With specific reference to the graded dosing scheme recommended by FDA, we state the following in Section IV. B. of the Guidance:

> [I]n the event of an emergency, some or all of the specific dosing recommendations may be very difficult to carry out given their complexity...The recommendations should therefore be interpreted with flexibility as necessary to allow optimally effective and safe dosing given

> the exigencies of any particular emergency situation. In this context…[we provide] the following critical general guidance: across populations at risk for radioiodine exposure, the overall benefits of KI far exceed the risks of overdosing, especially in children….

Q6: Does the FDA guidance apply to residents outside of the 10-mile emergency planning zone?

A6: Yes. KI administered in advance of an exposure will successfully block thyroidal uptake of radioiodine, wherever one may reside. We realize that graded dosing by age (and thus size) may be difficult to implement depending on the demands of a particular emergency situation (e.g., within the 10-mile EPZ where evacuation and KI administration may have to occur simultaneously, versus more remote locations) and depending upon the availability of different dosage strengths of KI (e.g., 65 mg). If local emergency planners conclude that graded dosing is logistically impossible, FDA believes that the overall benefits of taking 130 mg of KI instead of 65 mg to reduce the long-term risk of thyroid cancer far exceed the small risk from overdosing.

Q7: Are there plans to update the labeling for marketed KI products to conform to the revised FDA recommendations on dosing

A7: Yes. FDA is working with manufacturers to amend the "Drug Facts" labeling for KI products, which are sold over the counter, to incorporate the new dosing recommendations.